UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
BIN C15700
Seattle, WA 98115-0070

May 23, 2002

Michael Kulbacki
Federal Highway Administration
Evergreen Plaza Building
711 S. Capitol Way
Olympia, Washington 98501

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Act Essential Fish Habitat Consultation for Wine Country Road Improvement (NMFS No. WSB-01-269).

Dear Mr. Kulbacki:

The attached document transmits the National Marine Fisheries Service's (NMFS) Biological Opinion on the proposed Wine Country Road Improvement in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). The Federal Highway Administration (FHWA) had determined that the proposed actions are likely to adversely affect the Middle Columbia River (MCR) steelhead (*Oncorhynchus mykiss*) Evolutionary Significant Units (ESU). Formal consultation was initiated on March 18, 2002.

This Biological Opinion reflects formal consultation and an analysis of effects covering the MCR steelhead in the Yakima River and Spring Creek in Benton County, Washington. This biological opinion is based on information provided in the Biological Assessment sent to NMFS by the FHWA and additional information transmitted via telephone conversations, mail, and e-mail with the project applicant. A complete administrative record of this consultation is on the file at the Washington Habitat Branch Office.

The attached Biological Opinion contains an analysis of the effects of the proposed action on designated critical habitat. Shortly before the issuance of this opinion, however, a federalcourt vacated the rule designating critical habitat for the ESUs considered in this opinion. The analysis and conclusions regarding critical habitat remain informative for our application of the jeopardy standard even though they no longer have independent legal significance. Also, if critical habitat is redesignated before this action is fully implemented, the analysis will be relevant when determining whether a reinitiation of consultation will be necessary at that time. For these reasons and the need to timely issue this opinion, our critical habitat analysis has not been removed from this opinion.

The NMFS concluded that the proposed action is not likely to jeopardize the continued existence MCR steelhead, or destroy or adversely modify designated critical habitat. As required by Section 7 of the ESA, NMFS has included reasonable and prudent measures with nondiscretionary terms and conditions that NMFS believes are necessary to minimize the impact of incidental take associated with this action.

This Biological Opinion also serves as consultation on Essential Fish Habitat pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and implementing regulations at 50 CFR Part 600.

If you have any questions regarding this consultation, please contact Joel Moribe of the Washington Habitat Branch Office at (206) 526-4359.

Sincerely,

for Michael R Crouse

D. Robert Lohn
Regional Administrator

cc: Brian Hasselbach, WSDOT
Roger Arms, WSDOT
Paul Wagner, WSDOT

Endangered Species Act - Section 7
Biological Opinion

and

Magnuson-Stevens Fishery Conservation and Management Act

Wine Country Road Improvement Project
(WSB-01-269)

Agency: Federal Highway Administration

Consultation Conducted By: National Marine Fisheries Service
Northwest Region
Washington Habitat Branch

Approved: for Michael R Crouse
D. Robert Lohn
Regional Administrator

Date: May 23, 2002

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1.0 INTRODUCTION

1.1 Background Information

This document transmits the National Marine Fisheries Service's (NMFS) Biological Opinion (Opinion) and Essential Fish Habitat (EFH) consultation based on our review of a project to provide transportation improvements to the existing Wine Country Road in the City of Prosser (City), Benton County, Washington. The project includes constructing a new bridge crossing the Yakima River, a tributary to the Columbia River and is located in the Mid-Columbia River (MCR) evolutionary significant unit (ESU). The Yakima River is also essential fish habitat for chinook and coho salmon.

1.2 Consultation History

The Federal Highway Administration (FHWA) concluded that the proposed project by the lead agency (City of Prosser Department of Public Works) is likely to adversely affect MCR steelhead trout (*Oncorhynchus mykiss*) and their designated critical habitats.

The objective of this Opinion is to determine whether the proposed action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of designated critical habitat. This Opinion was completed pursuant to the Endangered Species Act (ESA) and its implementing regulations (50 C.F.R. 402), and constitutes formal consultation for MCR steelhead.

The Opinion is based on information provided in the Biological Assessment (BA) and the following written correspondence: On April 10, 2001, the NMFS received a BA (dated April 9, 2001) from the Washington State Department of Transportation (WSDOT). On November 9, 2001, NMFS met with FHWA, WSDOT, The City, CH2M Hill (authors of the BA), and Washington State Department of Fish and Wildlife (WDFW) to discuss the details of the proposed project and to inform them about our concerns with the effects of the project. On November 21, 2001, NMFS sent a letter to WSDOT and FHWA informing them that we did not concur with their "may affect, not likely to adversely affect" effect determination and requested additional information from the FHWA related to the proposed project. On January 3, 2002, NMFS met with CH2M Hill and received additional information regarding fish access improvements at Spring Creek, and details on in-water construction. Formal consultation was requested by FHWA and information necessary to conduct formal consultation was assembled by February 12, 2002.

Additionally, numerous telephone conversations and e-mail correspondence between NMFS staff, WDFW, The City, CH2M Hill, WSDOT and FHWA is included in the administrative record.

1.3 Description of Proposed Action

The FHWA proposes to fund, in whole or in part, improvement of Wine Country Road in the City of Prosser from the intersection of Nunn and Wamba Roads to Benitz Road. As part of this project, the City proposes to add an additional bridge directly upstream of the existing bridge across the Yakima River. Several elements comprise the project including geotechnical testing at the existing bridge, construction of a temporary access bridge, construction of the new bridge and widened approaches, new stormwater management, and fish passage/access improvement activities in Spring Creek.

Construction is expected to take up to two calendar years. Construction will begin in September and the first year of construction will involve the geotechnical testing and repair (if required), work zone staging, utility relocation, railroad overcrossing, stormwater facilities, and non-bridge road construction. All roads and facilities other than the bridge will be completed prior to the construction of the bridge.

The bridge will be constructed from June 15 of the second year to September of the following year. All in-water work will occur between June 15 and September 15. Construction of the temporary access bridge will take approximately 15 days. Coffer dams and false work will be installed in the river by the end of the in-water fish window to avoid construction interactions with fish. After the temporary access bridge, coffer dams, and false work are in place, the bridge piers and arches will be constructed. All bridge pier construction will be within the coffer dams and will not exceed four months. The construction of the piers is expected to extend beyond the end of the in-water work window. The piers will be constructed within coffer dams and no pile driving, blasting, drilling, or any earth or water column disturbance will take place.

The Geotechnical Testing includes up to six exploratory borings to assess scour at the footings of the existing bridge to determine whether voids at the bridge footings must be filled to stabilize the existing bridge. The borings will be performed using small drilling equipment located on the existing bridge deck. The borings will be drilled down through the existing bridge deck, then through the existing bridge footings. A drill casing will be installed through the hole in the bridge deck, down through the water column, and seated into the footing. The drill cuttings and water will be collected on the bridge deck in barrels as they are expelled from the top of the casing during drilling operations. All water and particles retrieved from the borings will be discarded in an approved infiltration pond to avoid discharge into the river. If testing reveals the need to stabilize the footings, repair will include sediment removal with pressurized water. After the sediments are removed, the voids will be pressure grouted within a contained system to avoid contact with the river. The containment systems will be removed after the grout dries.

The temporary access bridge will be constructed immediately upstream of the new bridge location on up to 84 temporary steel pilings located in the river bed. The bridge deck will be a 25-foot wide steel or untreated timber deck placed on the pilings. The temporary access bridge will remain in the river between the two constructions seasons (during peak adult and juvenile steelhead migrations). After construction of the bridge is complete, the temporary access bridge will be removed or cut. If the City is successful in removing the pilings, all residual holes will be completely filled with gravel. If pilings are cut and left in the river bed, the City will excavate the cut pilings to a depth of at least one foot beneath the bedrock surface and backfill with gravel.

Construction of the new bridge includes six permanent piers in the river and superstructure built above the high water line. The project calls for temporary coffer dams to isolate work areas from the river and minimize the effects of pier and other structural construction. Coffer dams will be placed for all six of the piers. The City will dewater areas inside the coffer dams to prepare and construct the bridge foundations and piers in the dry. Bedrock will be excavated at least two feet for the placement of the new bridge piers, using cranes and other heavy equipment. No blasting is required for excavation. The sediments and water removed from the excavations will not be discharged into the Yakima River or other surface waters of the state. The excavations will be filled with concrete and foundations of each of the piers will be cast in place. The City will remove and haul excavated material for disposal at an approved site. The footings of each foundations will be approximately 40 by 10 feet. The total area of river bed affected by this project is approximately 2,400 square feet.

The City will construct the bridge superstructure above the high water line, although construction requires some in-water work. An additional 40 steel pilings will be drilled into the bedrock build so-called “false towers” to support the bridge during arch construction. Each arch will require three false towers between the piers. The arches and some of the sections of the superstructure will be cast in place. The false towers will remain in place until the bridge is complete. After all construction is complete, all temporary structures including the temporary access bridge, coffer dams, and false work will be removed within the approved in-water fish window.

The City will construct a series of new stormwater management systems consisting of standard catch basins, oil-water separators, and infiltration vaults. A total of 33 of these systems are designed to treat and infiltrate an area covering more than 140% of the new impervious surface added by this project.

A limited amount of riparian vegetation will be removed during construction of the bridge, roadway, and stormwater facilities. All cleared or grubbed areas will be hydroseeded to facilitate vegetation growth and reduce erosion. Disturbed areas will be replanted with a mix of native trees and brush. Since the bridge will cause shade and will prohibit vegetation growth on the banks below it, the City proposes to plant trees and shrubs along the banks of Spring Creek within the project area (including weir placement).

Wine Country Road is being improved from I-82 to Benitz Road. Many of the improvements, including the addition of a center turn lane, bike paths, sidewalks, railroad overcrossing, and utility relocation are far enough removed from the Yakima River to avoid direct effects to the River. The proposed action includes culvert installations, but none affect fish bearing water.

Finally, the City will improve habitat access and improve fish passage at Spring Creek as part of this project. The work will occur at the existing culvert on the W. Hess Road crossing of Spring Creek, located approximately three miles downstream of Prosser Dam. The existing culvert is a six by eight foot, cast-in-place concrete box culvert with a slope of about 2.5 percent. The culvert is perched roughly 2-3 feet. There are several concrete blocks and other debris immediately downstream of the culvert that obstruct fish passage. The culvert is a barrier to adult and juvenile salmonids at most flows (Romey and Cramer 2001; Easterbrook, in Haring 2001). Nonetheless, salmonid carcasses are recovered each year suggesting some spawning in Spring Creek (LaRiviere, pers. comm.; Bambrick, pers. comm.). It is not known if these fish are a self-sustaining local population, or strays from on-going hatchery plants.

The City will remove the concrete and other debris immediately downstream of the culvert and will place four rock weirs, approximately 8 feet apart downstream of the culvert to achieve a stream gradient of not more than 1.0% to ensure fish passage. The weirs will consist of a series of 1.5 to 2 foot diameter rocks arranged in an upstream oriented “V” formation. The weirs are designed to aggrade and level out an existing high gradient riffle, and will be constructed so as to provide at least four steps of 0.8 foot or less each. The weirs are designed to provide a cascade that will guide water toward the center of the bank and create a pool directly below the center of each structure. Baffles will be placed into the culvert to funnel water through channels that can be passable for juvenile and adult steelhead. Rock weirs and baffles will be placed according to specifications in WDFW (1999).

The City or its contractors will use water quality best management practices during all construction elements of the project. These include a Temporary Erosion and Sediment Control Plan (TESCP) and a Spill Prevention Control and Countermeasures Plan (SPCC). Furthermore, the project is phased to enable construction during timing “windows” to minimize the likelihood of construction interactions with fish in the action area. Finally, the Spring Creek work is timed to occur in January and February when streamflow is low, decreasing the likelihood that fish will experience the temporary effects of that construction work.

1.4 Description of the Action Area

The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 C.F.R. 402.02). The action area includes the water and land (including submerged land), from approximately 100 feet upstream of the existing Wine Country Road Bridge to approximately 0.25 river miles below the bridge. The action area also includes the adjacent riparian zone within the construction area and all areas affected by the project including the staging area, stormwater facilities, roadsides, and areas serviced by the road improvements. The action area includes the location of planned habitat improvements in Spring Creek. The construction activities in Spring Creek are likely to manifest effects 25 feet upstream from the culvert to the Snipes Creek confluence to the Yakima River mainstem, approximately 0.5 miles downstream from the culvert.

2.0 ENDANGERED SPECIES ACT

2.1 Biological Opinion

2.1.1 Status of Species and Critical Habitat

MCR steelhead were listed as threatened under the ESA on March 25, 1999 (64 Fed. Reg. 14517). Critical habitat for steelhead was designated on February 16, 2000 (65 Fed. Reg. 7764). In Washington, the MCR steelhead ESU includes winter and summer steelhead in tributaries to the Columbia River above the Wind River upstream to include the Yakima River (Busby et al. 1996). Steelhead of the Snake River Basin are not included.

Six stocks of steelhead within the MCR ESU were identified as at risk of extinction or of special concern (Nehlsen et al. 1991). Busby et al. (1996) noted that the Yakima River stock was of particular concern and may be at risk of extinction. Estimates of historical, pre-1960s abundance for the Yakima River is 100,000 (WDFW et al. 1993). Haring (2001) reports a range of estimates from 20,800 (Kreeger and McNeil 1993) to 100,000 and an Ecosystem Diagnosis and Treatment (EDT) simulation estimated a population of 43,000 adults. Busby et al. (1996) reported that there was an average escapement of 1,300, with natural escapement of 1,200 in the Yakima River. These numbers represent an increasing trend from extremely low escapements in the early 1980's. More recently, Haring (2001) reported Yakima stocks averaging 1,256 fish (ranging as low as 505 in 1996 to 2,840 in 1988). Despite documents that claim that Yakima stocks are stable and no longer at risk of extinction (Monk, 2002), escapement levels in the past two decades have fluctuated and low escapements in the mid 1990's (505-925 fish) represent 1.3% of the historical run.

There are several factors for decline of MCR steelhead including habitat degradation through grazing and water diversion, overharvest, predation, hydroelectric dams, hatchery introgression, drought and other natural or human-induced factors (Busby et al. 1996). Based on estimates from the Yakima River before 1960, if we assume that other basins had comparable run sizes for their drainage areas, the total historical run size for this ESU might have been in excess of 300,000. The most recent 5-year average run size (1989-1993) was 142,000 with a naturally produced component of 39,000. These data indicate approximately 74% hatchery run in the total run to this ESU (Busby et al. 1996). The current natural run size for the MCR ESU might be less than 15% of estimated historical levels.

Haring (2001) reports: “Historically, steelhead were probably found wherever spring chinook were found, and in many other tributaries and reaches as well.” Steelhead also spawn in intermittent streams, smaller streams, and in streams with steep gradients. Presently, steelhead are still found throughout most of the Yakima River and its tributaries where access is provided. Spawning is documented in Toppenish Creek, Satus Creek, Ahtanum Creek, Naches River system, the Upper Yakima River mainstem and a few tributaries. The majority of production in the Yakima is from Toppenish Creek and Satus Creek (Hockersmith et al. 1995).

Essential features of critical habitat for steelhead include adequate substrate, water quality, water quantity, water temperature, water velocity, cover/shelter, food, riparian vegetation, and safe passage conditions. Recent and historical information related to abundance and life history is summarized in Busby et al. (1996).

2.1.2 Evaluating the Proposed Actions

The standards for determining jeopardy and adverse modification of critical habitat are set forth in section 7(a)(2) of the ESA as defined by 50 C.F.R. 402.02 (the consultation regulations). In conducting analyses of habitat-altering actions under section 7 of the ESA, NMFS uses the following steps of the consultation regulations combined with the Habitat Approach (NMFS 1999): (1) Consider the status and biological requirements of the species, (2) evaluate the relevance of the environmental baseline in the action area to the species' current status, (3) determine the effects of the proposed or continuing action on the species, and whether the action is consistent with the available recovery strategy; (4) consider cumulative effects; and (5) determine whether the proposed action, in light of the above factors, is likely to appreciably reduce the likelihood of species survival in the wild or adversely modify its critical habitat. In completing this step of the analysis, NMFS determines whether the action under consultation, together with all cumulative effects when added to the environmental baseline, is likely to jeopardize the ESA-listed species or result in the destruction or adverse modification of critical habitat. If either or both are found, NMFS must identify reasonable and prudent alternatives for the action.

Recovery planning will help identify feasible measures that are important in each stage of the salmonid life cycle for conservation and survival within a reasonable time. In the absence of a final Recovery Plan, NMFS must ascribe the appropriate significance to actions to the extent available information allows. NMFS intends that recovery planning identify areas/stocks that are most critical to species conservation and recovery from which proposed actions can be evaluated for consistency under section 7(a)(2).

2.1.2.1 Biological Requirements

The first step NMFS uses when applying the ESA section 7(a)(2) to the listed ESUs considered in this Opinion is to define the species' biological requirements within the action area. NMFS also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species within the action area, NMFS starts with the determinations made in its decision to list for ESA protection the ESUs considered in this Opinion and also considers any new data that is relevant to the determination.

The relevant biological requirements are those necessary for salmon in each ESU to survive and recover to naturally reproducing population levels, at which time protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

The biological requirements of MCR steelhead include food, flowing water (quantity), high quality water (cool, free of pollutants, high dissolved oxygen concentrations, low sediment content), clean spawning substrate, and unimpeded migratory access to and from spawning and rearing areas (adapted from Spence *et al.* 1996). Even slight modifications of these habitat elements can produce deleterious effects to MCR steelhead and their Critical Habitat.

The NMFS has related the biological requirements for listed salmonids to a number of habitat attributes, or pathways, in the Matrix of Pathways and Indicators (MPI). These pathways (Water Quality, Habitat Access, Habitat Elements, Channel Condition and Dynamics, Flow/Hydrology, and Watershed Conditions) indirectly measure the baseline biological health of listed salmon populations through the health of their habitat. Specifically, each pathway is made up of a series of individual indicators (*e.g*., indicators for Water Quality including temperature, sediment/turbidity, and chemical contamination/nutrients) that are measured or described directly (see, NMFS 1996). Based on the measurement or description, each indicator is classified within a category of the properly functioning condition (PFC) framework: (1) *properly functioning*, (2) *at risk*, or (3) *not properly functioning*. PFC is defined as "the sustained presence of natural habitat forming processes in a watershed that are necessary for the long-term survival of the species through the full range of environmental variation." Without other information regarding the numbers of fish necessary to recover a species, NMFS relies on the attainment and maintenance of PFC within a watershed to determine that the biological requirements of the species are met. The relevant biological requirements for this consultation are water quality, habitat access, flow/hydrology, and riparian habitat.

2.1.2.2 Environmental Baseline

The environmental baseline represents the current set of basal conditions to which the effects of the proposed action are then added. Environmental baseline is defined as "the past and present impacts of all Federal, State, and private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or informal section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation process" (50 C.F.R. 402.02).

For management purposes, State and Federal fisheries management agencies recognize three sections within the entire Yakima Watershed: Upper Yakima (Water Resources Inventory Area 39), Lower Yakima (WRIA 37), and Naches River (WRIA 38). The action area is within the Lower Yakima River subbasin. The Yakima River functions as a migration corridor for MCR steelhead throughout the action area. The action area is influenced by springs and groundwater upwelling and can support some juvenile rearing and adult overwintering.

Vegetation in the subbasin is a complex blend of forest, range and cropland. Over one-third of the land in the Yakima Subbasin is forested. Almost all of the forested vegetation in the Yakima Subbasin is at the headwaters in the Cascade Mountains. The lower subbasin is dominated by agricultural land use with sporadic urbanized areas.

Agriculture dominates the Yakima Basin landscape, especially in the lower region of the river basin. Agricultural lands comprise about 62% of the watershed, while forest land managed for timber harvest cover 35%, and urban areas represent less than 1% of the watershed (Haring 2001). The remaining land uses include mining, wilderness designation, and hydroelectric projects.

Among the concerns regarding the surface waters throughout the Yakima River watershed are severely altered hydrographs, poor water quality, fish passage barriers, low habitat complexity, loss of floodplain function, impaired riparian function, and false attraction at irrigation returns. Most of these surface water problems are associated with irrigated agriculture. Several areas of the Yakima, including Prosser Pool, have significant populations of non-indigenous and indigenous predators that prey on juvenile salmonids. Nonetheless, the watershed retains productive habitats (e.g., American River), and has significant habitat restoration potential. In addition, there are several areas with high quality habitat upstream of existing fish barriers (e.g.,Cle Elum River, Tieton River).

Impaired fish access is a prominent factor affecting salmonids in the basin; mostly associated with irrigation diversions and irrigation water storage throughout the watershed. Impassible irrigation storage dams were constructed on the upper Yakima River (Keechelus Dam), the Kachess River (Kachess Dam), the Cle Elum River (Cle Elum Dam), the Bumping River (Bumping Dam), and the Tieton River (Tieton Dam). These dams eliminated 112 miles of highly productive steelhead, coho, and chinook habitat and extirpated sockeye.

The occurrence and severity of other habitat limiting factors varies between streams and reaches within individual subwatersheds. The extent of current salmonid utilization is impaired to varying degrees throughout the watershed by loss of floodplain function (including loss of side-channel habitats within the floodplain), loss of in-channel habitat diversity, loss of channel and bank stability, increased presence of fines in the substrate that impairs spawning and rearing success and benthic invertebrate productivity, impaired riparian function, water quality impacts from agricultural runoff, and perhaps most importantly, altered hydrology throughout much of the watershed (Haring 2001).

Prosser Dam is located 1/4 mile downstream of the existing Wine Country Road overcrossing of the Yakima River. The backwatered reservoir created by the dam, called Prosser Pool, is low-energy, warm, and depositional in nature. The pool is 4-10 feet deep. The river bed is primarily bedrock.. High temperatures in Prosser Pool and sections of the mainstem Yakima River limits the extent and amount of freshwater rearing for adult and juvenile salmonids.

Slow, warm, pool conditions like those in the Prosser Pool provide favorable habitat for non-indigenous (e.g., smallmouth bass (*Micropterus dolomieu*), largemouth bass (*M. salmoides*), channel catfish (*Ictalurus punctatus*)) and indigenous (northern pikeminnow (*Ptychocheilus oregonensis*)) predatory finfish that prey on juvenile salmonids. Smallmouth bass and northern pikeminnow are relatively abundant at Prosser Dam (McMichael et al. 1998). Stomach content analysis in 1998 revealed that juvenile chinook and steelhead represented 23% and 29% of the diet of northern pikeminnow and smallmouth bass respectively. Predation of smolts by smallmouth bass was estimated at 500,000 smolts per year.

2.1.2.3 Factors Affecting the Species at the Population Level

For some salmonid ESUs in the Columbia Basin, including MCR steelhead, NMFS population trends in analyzing the effects of the underlying action on affected species at the population scale (see, for example, Reinitiation of Consultation on Operation of the Federal Columbia River Power System, Including the Juvenile Fish Transportation Program, and 19 Bureau of Reclamation Projects in the Columbia Basin, NMFS 2000.) For the MCR steelhead ESU as a whole, NMFS estimates that the median population growth rate (lambda) over the base period[1] ranges from 0.88 to 0.75, decreasing as the effectiveness of hatchery fish spawning in the wild increases compared to that of fish of wild origin (McClure et al. 2001). NMFS has also estimated the risk of absolute extinction for four of the spawning aggregations, using the same range of assumptions about the relative effectiveness of hatchery fish. At the low end, assuming that hatchery fish spawning in the wild have not reproduced (i.e., hatchery effectiveness = 0), the risk of absolute extinction within 100 years ranges from zero for the Yakima River summer run to 1.00 for the Umatilla River and Deschutes River summer runs (McClure et al. 2001). Assuming that the hatchery fish spawning in the wild have been as productive as wild-origin fish (hatchery effectiveness = 100%), the risk of absolute extinction within 100 years ranges from zero for the Yakima River summer run to 1.00 for the Deschutes River summer run (McClure et al. 2001). However, with respect to the Yakima River extinction risk, the estimates are extremely optimistic because of the nature of the source data and sparse information on hatchery fish (Michelle McClure, NOAA-NMFS Northwest Fisheries Science Center, personal communication).

2.1.2.4 Status of the Species within the Action Area

Historically, steelhead were found throughout the Yakima River watershed. Estimates of steelhead population of steelhead in the Yakima River range from 30,000 to 100,000. Presently, steelhead populations are limited by the scarcity of freshwater rearing habitat. Almost all spawning and juvenile rearing occur in tributaries. Steelhead are presently found throughout the Yakima River Subbasin where they have access. Major spawning reaches include the American

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[1]Estimates of median population grow th rate, risk of extinction, and the likelihood of meeting recovery goals are based on population trends observed during a base period that varies between spawning aggregations. Population trends are projected under the assumption that all conditions will stay the same into the future.

River, Naches River, Satus Creek, Toppenish Creek, and Ahtanum Creek. Historically, the Upper Yakima River and its tributaries were the most productive steelhead reaches in the system. Today, most of those reaches are blocked by dams. Presently, over half of the spawning occurs in Satus Creek and Toppenish Creek (Hockersmith et al. 1995), which are tributaries of the Lower Yakima River.

The action is primarily a migratory corridor for steelhead but also provides some rearing habitat for juveniles and overwintering adults. Busby et al. (1996) estimates 2 million hatchery summer steelhead are planted yearly throughout the MCR ESU. Hatchery steelhead have not been released into the Yakima River system since 1993. Up to 3 million hatchery steelhead were released into the Upper Yakima and the Naches River between 1950 and 1993(Haring 2001). There is no direct commercial fishery on this stock although incidental catch of wild steelhead may occur in the Columbia River. The Yakama Nation and the Confederated Tribes of the Umatilla Indian Reservation (Cayuse, Walla Walla, and Umatillas) may also harvest this stock at unknown numbers.

Steelhead adult migration into the Yakima River system is characterized as having two peaks. The first peak occurs in September and lasts through late December or early January, when they overwinter until they resume migration in the second peak, from February to June. Peak smolt outmigration occurs from March through mid-July. Most of the spawning in the Yakima River system occurs near the headwaters where there is adequate riparian vegetation, cold water temperatures, and clean unembedded gravel.

The action area for the bridge placement is within a backwatered low-energy stretch of the Yakima River mainstem caused by Prosser Dam located about 1/4 mile downstream of the existing bridge. Although Prosser Pool is not used extensively by steelhead for rearing, small clusters or individual steelhead can be observed in specific areas of the pool, probably due to cool water upwelling (LaRiviere 2001, pers. comm; Gullett 2002, pers. comm.). The bypasses on the dam have been screened to prevent salmonids from entrainment. This causes a collection point for disoriented smolts that are susceptible to predation by non-indigenous and indigenous predators.

The Yakama Indian Nation conducts yearly counts at Prosser Dam. Steelhead populations in the Yakima River continue to be chronically low with adult returns ranging from 505 to 2,840 adults. While populations may appear to be stable, available habitat for spawning and rearing continue to be threatened by increasing demand for water, fish blockages, and reduced riparian buffers.

2.1.2.5 Factors Affecting Species Environment within Action Area

Salmonid species in the action area are affected by the variety of land use activities and alterations in the this part of the Yakima River. The extent and quality of present salmonid habitat reflects the watershed-wide loss of floodplain function (including loss of side-channel habitats within the floodplain), loss of in-channel habitat diversity, loss of channel and bank stability, increased presence of fine sediment in the substrate, impaired riparian function, water quality impacts from agricultural runoff, and perhaps most importantly, altered hydrology throughout much of the watershed due to land use and irrigation water delivery (Haring 2001).

Prosser Dam is 1/4 mile downstream of the Wine Country Road bridge, creating a deep, stagnant pool that collects sediments and has seasonally high water temperatures. The aquatic habitat within the pool has almost no diversity. Fish access above Prosser Dam is provided by three fish ladders. Sections in the Yakima River within the action area have been designated as Clean Water Act Section 303(d) reaches because of low dissolved oxygen, high temperature and impaired instream flow. Reduced riparian cover, irrigation withdrawals, and runoff are likely to be contributors to water quality degradation within the basin. Roads, urban and rural development, dams, and agricultural land uses have altered channel dynamics and hydrology in the basin.

Juvenile salmonids must pass dams in their outmigration. Presence of flow altering structures, among other things, increase the exposure of these fish to predation in addition to the effects of the structures themselves. The alteration of flow and habitat, particularly at reaches below major diversions may increase the suitability of habitat or predation effectiveness of these predators (Haring 2001). Indigenous (e.g., northern pikeminnow) and non-indigenous (e.g., smallmouth bass, channel catfish) predators exist in high densities above and below Prosser Dam (McMichael 1998; Haring 2001). Juvenile salmonids may account for up to 34% of the diet in smallmouth bass (Zimmerman 1998; Poe et al. 1991). Stomach content analysis has shown juvenile salmonids as 23% of northern pikeminnow’s diet (McMichael 1998). Most of the studies in the Lower Yakima River referenced in Haring (2001) are focused on juvenile chinook predation and some have identified chinook as the most abundant prey among the salmonids. This may be due to the timing of the studies (during peak chinook outmigration), the size of the young salmonids when they migrate, or simply the higher percentage of salmonids in the Yakima River being chinook.

Spring Creek is a right bank tributary to Snipes Creek which joins the Yakima River approximately three miles downstream from Prosser Dam. Spring Creek is an altered waterway that has been straightened in areas and is influenced by agricultural withdrawals and returns. Spring Creek was entirely excavated to enhance its ability to carry irrigation waste water (Perala in Haring 2001). There are three potential barriers on the Spring Creek system. The blockage at W. Hess Road is the most downstream and the most notable blockage of the three. Spring Creek is rated as a severely impaired waterbody, with noted concerns including pesticides, invertebrates, algae, and overall impacts of agriculture (Cuffney et al. 1997). Spring Creek is on the Clean Water Act Section 303(d) list for high temperature.

2.1.3 Effects of the Proposed Action

The proposed addition of another bridge directly upstream of the existing Wine Country Road bridge is likely to adversely affect MCR steelhead as determined by the FHWA. The action area is important to MCR steelhead, mainly as a migration corridor. To a lesser extent, the portions of Yakima River that flow through the action area may support rearing areas for juvenile steelhead.

The ESA implementing regulations define “effects of the action” as “the direct and indirect effects of an action on the species or critical habitat together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline.” Indirect effects are those that are caused by the proposed action, are later in time, but are still reasonably certain to occur (50 C.F.R. 402.02).

2.1.3.1 Direct Effects

Direct effects are the immediate effects of the project on the species or its habitat. Direct effects result from the agency action and include the effects of interrelated actions and interdependent actions. Future Federal actions that are not a direct effect of the action under consideration (and not included in the environmental baseline or treated as indirect effects) are not evaluated.

Juvenile and adult steelhead will use the action area during the proposed construction periods. Generally, the direct effects are related to the extent and duration of construction activities in or adjacent to Yakima River and Spring Creek. Many of the adverse effects associated with the proposed project are likely to be short in duration (2-3 months) and have been minimized through restrictions in timing of construction. Temporary piles and false work will affect steelhead and critical habitat throughout the entire 14-15 months of construction.

2.1.3.1.1 Water Quality

In-water construction activities, including excavation and footer construction can degrade water quality by increasing existing levels of sediment at the construction site and downstream. the proposed action includes several measures intended to minimize or eliminate such effects. For example, the City is proposing to implement sediment control measures and other best management practices in the Yakima River and Spring Creek. Other measures include isolating the work area from the river through the use of cofferdams, and preventing the discharge of excavated materials to the river. As a result, the adverse effects associated with in-water construction will be avoided or minimized. Furthermore, the proposed action includes restricted construction timing to further minimize the risk that increased sediment mobilization will affect MCR steelhead. Finally, the use of erosion control measures identified in the BA and other documents. It is expected that listed species present during construction will seek refugia or will avoid portions of stream with high turbidity and sediment levels. Overall, the increased turbidity and sediment are not expected to influence the environmental baseline beyond the period of time required to complete construction.

2.1.3.1.2 Disturbance of River Bed

Drilling holes into the river bed for the construction of the temporary work bridge and new foundations will cause considerable disturbance to the river bed. To a lesser extent, placement and removal of temporary structures, and filling of voids will disturb the Yakima River bed. The river bed at the project site and much of the action area is essentially exposed basalt bedrock, with little or no sediment and loose river deposits (CH2M Hill 2001). Any structures seated on the river bed must be drilled into the bedrock. The construction of the new bridge requires drilling shafts into the river bed, crushing and excavating bedrock, and pouring concrete into the holes to build the foundations. The construction of the new bridge will require the use of a temporary work bridge, false towers, and cofferdams. These activities will disturb the river bed.

Since the action does not support spawning, activities that affect the river bed are not likely to adversely affect spawning behavior. However, these activities are likely to affect migration, holding, and rearing behaviors during construction periods. These effects should be minimized by the use of work timing restrictions to avoid work while the above-described salmonid behavior occur in the action area. Furthermore, the use of coffer dams and other structures to isolate construction activities from the water column will also avoid or minimize the short term effects during construction.

2.1.3.1.3 Removal of Riparian Vegetation

The proposed action calls for removing riparian vegetation. Some removal will be permanent (within the footprint of the new bridge). Some lost vegetation will be temporary (areas cleared to prepare for construction). In both cases, the proposed action provides for replanting in a manner that minimizes the effects of lost riparian vegetation.

Harding (2001) listed fair riparian conditions between the Prosser Dam and Granger. Riparian vegetation links terrestrial and aquatic ecosystems, influences channel processes, contributes organic debris to streams, stabilizes streambanks, and modifies water temperatures (Gregory et al. 1991). Removal of vegetation may result in increased water temperatures that would further degrade already impaired water temperatures in the action area. Elevated water temperatures may influence numerous attributes of salmonids including physiology, growth and development, life history patterns, disease, and competitive predator-prey interactions (Spence et al. 1996). Loss of vegetation also may reduce allochthonous inputs to the stream. Woody debris provides essential functions in streams including the formation of habitats. Additionally, the removal of vegetation decreases streambank stability and resistance to erosion.

To minimize the effects of lost riparian vegetation in the action area, the proposed action includes a replanting plan for Spring Creek. The Spring Creek replanting will enable the development, over time, of properly functioning riparian conditions where presently there are none.

2.1.3.1.4 Obstruction of Migration and Loss of Habitat

The proposed action involves the addition of new structural objects (piles and piers) creating both temporary and permanent partial obstacles to upstream and downstream migration of adult and juvenile steelhead. The presence of these structures in the river will also displace space used by adult steelhead for overwintering. The in-water structures will also decrease space used, to a lesser extent, by juvenile steelhead for rearing. The temporary piles will remain in the river for the entire 14-15 month work period. The bridge piers are permanent. However, isolating the in-water structures from the river should minimize the effects of the temporary structures on fish. The new piers will displace 2,400 square feet of low quality steelhead rearing and migration habitat.

As a general matter, the lower Yakima river lacks rearing habitat for steelhead generally occur (Bjornn 1978; Ward and Slaney 1993), and the Yakima steelhead populations appear to be limited by the current carrying capacity of the watershed (Haring 2001). However, unlike chinook salmon in the Yakima River subbasin, steelhead tend to rear in tributaries rather than mainstems (Haring 2001). Furthermore, the fish passage improvement at Spring Creek, discussed in greater detail below, will increase the amount of suitable freshwater rearing habitat in the action area.

Adult migrants will have to alter usual migrating behaviors when they encounter the new pier and temporary construction structures. Affected steelhead would have to expend additional energy avoiding these structures. Avoidance behavior is likely to cause stress and injury during the migration past the structures. To minimize these effects on migrating fish, the proposed action calls for aligning the new structures with the existing ones. Thus while adding new structures to the migratory corridor, the existing migration corridor will appear much the same as the existing baseline. The addition of piers in-line with the existing piers may cause a tunneling effect much like culverts, but will not significantly affect the migration of adult and juvenile steelhead or their habitat. The bridge piers will diminish the amount of rearing space available to juvenile steelhead in the action area.

2.1.3.1.5 Fish Passage Improvement

The proposed action includes improving fish passage at the W. Hess Road crossing of Spring Creek. The existing culvert at W. Hess Road is an undersized 6x8 foot concrete box. It is perched and is blocked even further with concrete blocks and other debris just downstream of the culvert. The culvert is one of three barriers identified on Spring Creek (Haring 2001). It is also the most substantial. The culvert is a barrier to adult and juvenile salmonids at most flows (Romey and Cramer 2001; Easterbrook pers com in Haring 2001). The City will participate in a WDFW effort to improve habitat above the W. Hess Road crossing by acquiring and improving riparian buffers and reducing sediment loading.

Habitat access improvements include retrofitting the existing, undersized culvert with a series of "angled baffles." Such designs are prone to collecting debris and can clog if debris builds up on baffles and rock weirs. It will be very important that the culvert is inspected annually to ensure it remains passable. The installation of the rock weirs will change local habitat conditions by altering the gradient of the stream. However, the rock weirs will provide a greater diversity of habitat and will facilitate access to additional, more diverse habitat upstream.

2.1.3.2 Indirect Effects

Indirect effects are caused by or result from the proposed action, are later in time, and are reasonably certain to occur. Indirect effects may occur outside of the area directly affected by the action. Indirect effects may include other Federal actions that have not undergone section 7 consultation but will result from the action under consideration. These actions must be reasonably certain to occur, or they are a logical extension of the proposed action.

2.1.3.2.1 Impervious Surface and Stormwater Facilities

Outside of the City of Prosser, most of the action area has a low road density. The proposed action will add 6.36 acres of new impervious surface in the action area, a relatively small increase in the Lower Yakima River subbasin. The watershed is mostly rural and agricultural open space and with ample space to restore vegetation within the watershed.

New or expanded roads add impervious surface to a watershed, potentially causing a variety of problems for fish if not properly addressed. As more impervious surface is added to the watershed, changes in water quality and hydrology that affect salmonid species, are more easily detected. However the effects of added impervious surface in a watershed can be addressed in a variety of ways, including the treatment of stormwater delivered across the impervious area. Stormwater treatment facilities and other techniques can reduce those changes in water quality and quantity if they are designed with the project.

The proposed action addresses the potential effects of added impervious surface on watershed hydrology by including stormwater treatment facilities designed to treat and infiltrate all of the stormwater generated the new impervious area. Water quality treatment will remove pollutants and fine sediments from surface water. Furthermore, the proposed action calls for infiltration, the preferred method for treating added stormwater runoff from new impervious area. Infiltration will minimize the effects to the hydrology of the system and limit the increases in water temperature that would occur in detention facilities. The majority of the additional impervious surface is spread out over a 2.75 mile stretch of existing roadway. Stormwater generated at the bridge will be fully infiltrated. The infiltration swales designed into the road project will minimize effects associated with the added impervious surface. Accordingly, NMFS believes that the effects of the increase in impervious surface is discountable.

2.1.3.2.2 Changes in Fluvial Transport and Channel Morphology

The existing bridge has six piers in the river. The proposed action will add six new piers. In-water piers can effect the way water moves in the river in ways that affect fish. Water funnels through piers, decreasing its lateral distribution along the channel and increasing water velocity in the channel. During high flows, faster current and the narrower channel can promote downcutting and channel incision. Piers in the water can also disrupt natural flow and cause scouring at the base of the piers. Scour pools can be beneficial habitat for salmonids. However, safety concerns usually call for filling pools shortly after detection to protect bridge integrity.

Presently, there are voids, ranging from less than 1 foot to 4 feet below the footing, at the upstream end of each the existing bridge piers. The City is conducting geo-technical tests to determine if the bedrock is scouring at the existing piers. Evidence of scouring will likely indicate that scouring will occur at the new piers. NMFS does not expect that scour will be an issue at the new piers as they will be aligned with the existing piers. Furthermore Prosser Dam produces a backwater, and the river bed at the project site is almost entirely fine grained silts overlain on basalt bedrock. However, if geo-technical tests indicate that scour problems may develop, and the City of Prosser seeks to fill scour pools, FHWA must reinitiate consultation with NMFS.

2.1.3.2.3 Freshwater Predation on Juvenile Salmonids

Predation of migrating juvenile salmonids increases in reaches of simplified habitat such as has developed at Prosser Pool. Furthermore, juvenile salmonids are ambushed as they pass through bypass systems at all four dams on the Yakima mainstem (Haring 2001). Simplified habitat provides little value to salmonids but supports indigenous and non-indigenous fish that prey on juvenile salmonids. Channel catfish (*Ictalurus punctatus*), smallmouth bass (*Micropterus dolomieu*), and northern pikeminnow (*Ptychocheilus oregonensis*) are the dominant predators of juvenile salmonids in the Lower Yakima River. Channel catfish are abundant in the Yakima River near Richland. Smallmouth bass are abundant from Richland to Prosser Dam. Upstream of Prosser Dam, northern pikeminnow are the most abundant predatory fish (Dunnigan and Lamebull 2000). Scientists have also observed avian predation (primarily gulls) at Prosser Dam and Chandler Canal as well. Several studies demonstrate piscivores' affinity for preying on salmonids and other fish at bypass structures and at the bottoms of dams (Dunnigan and Lamebull 2000; McMichael et. al 1998; Dunnigan 1997; Ward et. al 1995; Tabor et al. 1993; Beamesderfer and Rieman 1991; Vigg et. al 1991).

Northern pikeminnow are the most abundant predator between Prosser Dam and Roza Dam (Pearsons et al. 2001). Nevertheless, the action area above Prosser Dam is not considered a "hotspot" for northern pikeminnow and the project is not likely to increase predation rates of juvenile steelhead by northern pikeminnow. Northern pikeminnow and smallmouth bass are the most common predators in Prosser Pool but are mostly concentrated near the dam where they can ambush their prey. Adding the new piers in-line with the existing piers may slightly concentrate fish as they pass under the bridge. However, the piers themselves will not present as advantageous an ambush site as the dam. Therefore, the additional piers are not likely to increase predation on juvenile salmonids.

2.1.3.3 Effects on Population Trends

Under the environmental baseline, population growth trends (lambda) are limited by the influence of hatchery fish, by physical barriers that prevent migration to historical spawning or rearing areas, and by water temperature barriers that influence the timing of emergence, juvenile growth rates, or the timing of upstream or downstream migration. Construction activities, will add temporary, construction-related effects to the existing environmental baseline. The project includes a number of measures to minimize these effects including the use of water quality best management practices, work timing restrictions or "windows," and worksite isolation techniques. The proposed action also add several temporary and six permanent artificial structures to the Yakima River. Again, the project minimizes the effects by addressing removal and remedy for the temporary structures and access presently unused habitat in the action area. As a result, these effects, detailed above, are not expected to have any significance at the population level. Therefore, the Services believe the proposed action does not contain measures that are likely to exacerbate existing population trends for the population of MCR steelhead in the action area.

2.1.3.4 Effects on Critical Habitat

The proposed actions will affect essential features of the designated critical habitat for MCR steelhead. NMFS designates critical habitat based on physical and biological features that are essential to each listed species. Essential features of designated critical habitat include stream substrate, water quality, water quantity, water temperature, water velocity, food, riparian vegetation, access, and safe passage conditions for fish. NMFS determined that the proposed action is likely to influence water quality, water quantity, water velocity, water temperature, and riparian vegetation. But none of the effects on critical habitat are expected to be the construction period. Furthermore, the proposed action includes fish habitat improvements on Spring Creek benefitting critical habitat (access, passage, riparian habitat) in the action area.

All construction activities involving the bank or the stream bed, may cause short-term increases in turbidity, during construction activities. These effects should be minimized by measures that will isolate work areas from the river.

The addition of a new bridge next to the existing bridge will increase the number of in-water structures in the Yakima River. The addition of the bridge piers will reduce the amount of river bed available to rearing steelhead by up to 2,400 square feet. In addition, the bridge piers will connect to existing piers creating a tunneling effect between the piers. The reduction in aquatic habitat can appreciably reduce the quality of the habitat in many places but does not in this case because of its present conditions. Steelhead rearing in the action area is presently limited because of poor habitat and water quality conditions. Furthermore, the amount of riverbed or water column at the action area does not seem to be limiting. Cooler water temperatures, higher dissolved oxygen, improved fish passage, side channels, improved riparian cover, and diverse habitats in the action area can improve the existing areas that are not consumed by man-made structures.

The new bridge will also add overwater structure to the Yakima River. Overwater structure produces shade which has been empirically shown to decrease the survival rate of, or at least promote behavioral changes in various components of the biological community. Lighting associated with these structures may possibly alter fish species behavior, posing increased risk of predation and causing disruption of fish migration patterns. Empirical evidence indicates that changes in the underwater light environment may have an impact on juvenile salmonid physiology and behavior (Simenstad et al. 1999; Carrasquero 2001). However, most of the findings in Simenstad et al. 1999 and Carrasquero 2001 are based on docks, piers, aprons, and other structures that are floating, on the water, or close to the water. Bridges, on the other hand, are usually higher, allow more light, and may not have the same intensity of detrimental effects.

The temporal loss of riparian vegetation further contributes to the degradation of the already degraded portion of riparian forest in the Yakima River system. Planting disturbed areas with native trees and shrubs is necessary to maintain or improve the condition of the riparian habitat in the long-term. The planting at Spring Creek will ensure long-term restoration of the disturbed riparian vegetation.

The proposed improvement of fish passage at W. Hess Road will maintain or improve the functional quality of most habitat indicators presently inhibited by the undersized culverts. Improvements in baseline habitat conditions will result from the removal of barriers to fish passage and the subsequent increase in habitat diversity. Fish passage improvement on Spring Creek will sufficiently minimize the effects to critical habitat at the bridge site. The short-term negative effects associated with changes in water quality and macroinvertebrate communities are not expected to have a lasting effect on baseline conditions.

2.1.4 Cumulative Effects

Cumulative effects are defined as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation" (50 C.F.R. 402.02). Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

The action area is within the City, population 5,035. Prosser Dam, one of the four irrigation diversion dams in the Lower Yakima, is about 1/4 mile downstream. The City's urban boundary and agricultural practices leave little stream buffer width.

The proposed project will improve access to the Port of Benton, the Prosser Airport, and the East Prosser Industrial Park. The project has over 15 financial partners, including local business, other local jurisdictions, WSDOT, and Community Economic Revitalization Board (WSDOT 2002). The road project starts at the intersection of Nunn Road and ends at Benitz Road. The road will improve the connection between Prosser Airport located at Nunn Road and the Port of Benton's Wine and Food Park located at Benitz Road. The road project will ease existing congestion in the region and will allow safe passage of semi trucks entering and leaving the city.

Potential cumulative effects expected from this project consists of increasing industrial development within the City which the transportation improvements serve. The Port of Benton owns approximately 100 acres of open habitat within their industrial park. The entire area is zoned industrial land use. Several possible tenants have already expressed strong interest in locating at the industrial park (WOTED 2001). NMFS expects future development from private, State, and other local jurisdictions is reasonably likely to occur. Residential population in The City is expected to grow at a similar rate and intensity as in recent years. Benton County is expected to add about 40,000 residents by 2012 (WOFM 2002). Most of this growth is expected to occur in Richland and Kennewick but some is expected in Prosser.

Several infrastructure improvements are necessary to facilitate the transformation of rural or low density development to urban/high density development. Water supply, electricity, wastewater treatment, and a safe, accessible transportation system are among common necessities for livable residential communities. In addition to this road improvement project, the City is planning to extend water and sewer infrastructure to the Industrial Park (WOTED 2001; WOTED 2000). The water/sewer extension project and this road project is expected to facilitate development of the vacant lots in the industrial park. It would be difficult to isolate the amount of development that would be facilitated by the proposed Wine Country Road improvements from the rest of the infrastructure improvements. Nonetheless, the proposed project contributes to development by improving existing infrastructure which is inadequate for levels of service expected as a result of future development.

Some portions of the industrial park are presently occupied, but large parcels are still undeveloped. A more suitable, more accessible industrial park is reasonably likely to attract businesses into the area and develop some of the vacant lots will make the action area more accessible to potential developers. The majority of the lots are over 300 feet away from the bank of the Yakima River and consist of grass, brush, and shrubs.

The increasing urbanization of the Yakima watershed threatens the biological health of streams (Jones and Clark 1987; Pedersen and Perkins 1986; Karr 1991; Klein 1979; Booth et al. 2001). Paving of open space increases the amount of impervious surface which shifts surface and subsurface hydrologic patterns. As infiltration is increasingly obstructed by rooftops, roads, parking lots, and driveways, groundwater and aquifer recharge declines. As a result, there is an increase in peak flow, reduction in base flow, and dewatering of wetlands. In addition, increased impervious surface precludes the growth of mature trees throughout the watershed which improves hydrologic patterns by providing duff to improve infiltration, supports invertebrate communities, and provides shade for reducing the temperature of surface flows.

Benton County has adopted several protective ordinances to protect open spaces, shorelines, and riparian habitat. Implementation of such ordinances and protective measures is vital to the protection of critical habitat for MCR steelhead. However, Booth et al. (2001) has shown that "even when drainage regulations are in place and have been applied to new development, they generally do not achieve genuine mitigation of urban-induced increases in runoff." The City should not only enforce their critical ordinances but look for ways to reduce the amount of impervious surface in fish bearing watersheds.

NMFS has been working with other Federal, State, and Local agencies, and landowners in the watershed to minimize effects to MCR steelhead. NMFS does not expect any further habitat degradation from agricultural practices. NMFS assumes that non-Federal land owners in those areas will also take steps to minimize or avoid land management practices that would result in the take of those species. Such actions are prohibited by section 9 of the ESA, and subject to the incidental take permitting process under section 10 of the ESA.

2.1.5 Conclusion

NMFS concludes that the proposed actions are not likely to jeopardize the continued existence of MCR steelhead or result in the destruction or adverse modification of their designated critical habitat. The determination of no jeopardy was based on the following: 1) timing restrictions related to in-water construction are expected to minimize impacts to fish and their habitat, 2) riparian vegetation removal is expected to have short-term effects and replanting will have long term benefits, 3) installation of stormwater facilities will minimize the hydrologic effects of increased impervious surface added to the Lower Yakima River watershed, 4) fish passage improvement in Spring Creek will minimize the effect of reducing rearing habitat by the new structures in the Yakima mainstem by increasing the amount of rearing habitat for steelhead.

MCR steelhead population growth trends (lambda) in the action area are limited by the influence of hatchery fish, by physical barriers that prevent migration to historical spawning or rearing areas, and by water temperature barriers that influence the timing of emergence, juvenile growth rates, or the timing of upstream or downstream migration. The proposed action includes construction activities that will cause temporary and permanent effects and a number of measures to minimize these effects. As a result, these effects, detailed above, are not expected to have any significance at the population level. The increase of structures in the Yakima River will result in an increase of obstructions to migration in the Yakima River and a reduction of rearing habitat in the mainstem. However, the action area at the site of the bridge is poor rearing habitat and the fish passage improvement at Spring Creek is reasonably likely to increase the amount and quality of rearing habitat in the Lower Yakima River. In addition, the fish passage improvement can provide access to potential spawning habitat at the headwaters. Removal of fish from dewatered areas, the shortening of the river channel, and increased sediment levels will result in displacement of fish in Spring Creek during construction of the fish passage improvement. Therefore, the proposed activities are not expected to appreciably reduce the likelihood of survival and recovery of MCR steelhead.

2.1.6 Reinitiation of Consultation

Consultation must be reinitiated if: the amount or extent of taking specified in the Incidental Take Statement is exceeded, or is expected to be exceeded; new information reveals effects of the action may affect listed species in a way not previously considered; the action is modified in a way that causes an effect on listed species that was not previously considered; or, a new species is listed or critical habitat is designated that may be affected by the action (50 C.F.R. 402.16).

2.2 Incidental Take Statement

Section 9 of the ESA and Federal regulation pursuant to section 4 (d) of the Act prohibit the take of endangered and threatened species without special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Harm is further defined as significant habitat modification or degradation that results in death or injury to listed species by "significantly impairing behavioral patterns such as breeding, spawning, rearing, migrating, feeding, and sheltering" (64 Fed. Reg. 60727; November 8, 1999). Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such takings is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the effects of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize take and sets forth terms and conditions with which the action agency must comply to implement the reasonable and prudent measures.

2.2.1 Amount or Extent of Take Anticipated

The NMFS anticipates that the proposed action may is reasonably certain to result in incidental take through harm and harassment of juvenile and adult steelhead. The exact amount of expected take is difficult, if not impossible to quantify. Instead, the extent of effects on habitat in the action area have been analyzed and NMFS developed Reasonable and Prudent Measures (RPMs) in consultation with FHWA to minimize effects not already accounted for by the proposed action.

Importantly, the extent of effects identified in section 2.1.3 of this Opinion includes the beneficial effects of minimization measures proposed as part of the action. Harm through temporary and permanent habitat modification is minimized by the inclusion of these measures in the proposed action. These measures include best management practices to control sediment and erosion, spill and pollution prevention, techniques to isolate the worksite from fish presence (timing restrictions, capture and relocation, and various diversion methods (especially coffer damming). Furthermore, the proposed action addresses effects on action area hydrology by building stormwater management where none presently exists. Finally, the proposed aciton includes measures in the action area to enhance access and provide additional space to listed salmonids to account for the temporary presence of artificial structures and six new permanent structures in the action area. However, to ensure the effectiveness of the habitat access improvement measures and the fish/worksite removal activities, the RPM addresses the need to monitor, report, and maintain (for the habitat improvement project) these measures.

2.2.2 Reasonable and Prudent Measures

The NMFS believes that the following reasonable and prudent measures are necessary and appropriate to minimize incidental take of MCR steelhead:

1. The FHWA shall ensure that the amount of take associated with dewatering and fish handling is minimized during any of the construction processes that require dewatering.

2. The FHWA shall ensure that take is minimized by monitoring and maintaining the proposed fish access improvements in Spring Creek.

2.2.3 Terms and Conditions

To comply with ESA section 7 and be exempt from the prohibitions of ESA section 9, the FHWA must comply with the terms and conditions that implement the reasonable and prudent measures. There terms and conditions are non-discretionary.

1. To implement RPM 1, The FHWA shall ensure a) monitoring and reporting of take during in-water construction (i.e., bridge construction, baffle installation, placement of rock weirs), and b) no more than 100 feet of Spring Creek is dewatered for no more than 3 weeks. FHWA reporting should follow the format suggested in Appendix A. The reports shall be submitted monthly beginning when the initial in-water construction activities commence until in-water construction activities cease. The reports shall be sent to National Marine Fisheries Service, 510 Desmond Drive SE, Suite 103, Lacey, WA 98503. Although fish kills are not expected to occur and are not authorized by this incidental take statement, all salmonids killed by the action shall be collected and frozen. FHWA shall notify NMFS and deliver any carcasses recovered.

2. To implement the RPM 2, the FHWA shall ensure monitoring and maintenance of the improvements to the W. Hess Road overcrossing. Since the improvements are not designed to pass debris, it may clog and cause a fish blockage. FHWA shall ensure that the fish passage is

maintained for the life of the bridge or until the W Hess Road overcrossing no longer requires maintenance. All debris shall be removed from baffles. Woody debris shall be released downstream of the furthest downstream rock weir. This provision is incorporated here by reference as a Term and Condition of this Incidental Take Statement.

2.3 Conservation Recommendations

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop additional information.

1. Haring (2001) identified two other potential barriers to upstream migration in Spring Creek. LaRiviere (pers com) identified Old Inland Empire Highway overcrossing as a potential blockage and Hubble (pers com) identified another at the Roza Canal overcrossing/spillway. In order to fully realize the benefits to habitat improvements by this project, FHWA, WSDOT, Benton County or other local jurisdiction should improve passage at the other blockages.

2. The full build out of the industrial park will result in a large amount of impervious surface in the Yakima River watershed. The land on the eastern end of the road improvement project is zoned for industrial land use and can be built out to 85% impervious surface. Benton County, the City, and other public governmental agencies should utilize their authority to minimize the amount of impervious surface in the Yakima River watershed. Increases in impervious surfaces can be minimized by using porous asphalt or other impervious surface minimization. The effects of increased impervious surface can be minimized by requiring infiltration to any new impervious surfaces in the defined action area and throughout the Yakima River watershed within their jurisdiction.

3. Numerous physical and biological problems associated with structures such as bridge piers in rivers or other waterways are documented throughout scientific and technical papers. The physical features of the environmental baseline at the bridge site is such that structures are not likely to significantly alter physical or biological processes. However, generally, structures within the floodway are detrimental to fish habitat. FHWA should exercise its authority to conserve fish habitat by reducing the amount or extent of structures within the floodway.

3.0 MAGNUSON-STEVENS FISHERY CONSERVATION MANAGEMENT ACT

3.1 Background

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan. Pursuant to the MSA:

- Federal agencies must consult with NMFS on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (§305(b)(2));

- NMFS shall provide conservation recommendations for any Federal or State activity that may adversely affect EFH (§305(b)(4)(A));

- Federal agencies must provide a detailed response in writing to NMFS within 30 days after receiving EFH conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NMFS, the Federal agency shall explain its reasons for not following the recommendations (§305(b)(4)(B)).

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting this definition of EFH: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 C.F.R. 600.110). Adverse effect means any impact which reduces quality and/or quantity of EFH, and may include direct (*e.g.*, contamination or physical disruption), indirect (*e.g.*, loss of prey or reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 C.F.R. 600.810).

EFH consultation with NMFS is required regarding any Federal agency action that may adversely affect EFH, including actions that occur outside EFH, such as certain upstream and upslope activities.

The objectives of this EFH consultation are to determine whether the proposed action would adversely affect designated EFH and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH.

3.2 Identification of EFH

Pursuant to the MSA the Pacific Fisheries Management Council (PFMC) has designated EFH for three species of federally-managed Pacific salmon: chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), and Puget Sound pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies presently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC 1999), and longstanding, naturally-impassable barriers (i.e., natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the Pacific Coast Salmon Plan (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based, in part, on this information.

3.3 Proposed Actions

The proposed action and action area are detailed above in Section 1. The action area includes habitats that have been designated as EFH for various life-history stages of chinook and coho.

3.4 Effects of Proposed Actions

As described in detail in Section 1 of this document, the proposed action may result in detrimental short- and long-term impacts to a variety of habitat parameters. These adverse effects are:

1. Short term degradation of habitat due to dewatering of less than 1,500 square feet of the wetted channel and diversion of Spring Creek.

2. Short term degradation of water quality in the action area due to an increase in turbidity during in water construction.

3. Short term degradation of habitat due to removal of riparian trees and vegetation.

4. Short term degradation of habitat due to the placement of nearly 150 steel piles in Yakima River for the temporary access bridge. The piles are expected to be in the river for 14-15 months.

5. Long term change in fluvial morphology due to placement of bridge in Yakima River and placement of baffles and rock weirs in Spring Creek.

6. Long term reduction in river bed and water column habitat in Yakima River due to the placement of the bridge.

3.5 Conclusion

NMFS believes that the proposed actions may adversely affect EFH for chinook and coho salmon.

3.6 EFH Conservation Recommendations

Pursuant to Section 305(b)(4)(A) of the MSA, NMFS is required to provide EFH conservation recommendations to Federal agencies regarding actions that would adversely affect EFH. Because the conservation measures that the FHWA included as part of the proposed actions to address ESA concerns are also adequate to avoid, minimize, or otherwise offset potential adverse effects to chinook salmon to the maximum extent practicable, conservation recommendations are not necessary.

3.7 Statutory Response Requirement

Since NMFS is not providing conservation recommendations at this time, no 30-day response from the FHWA is required (MSA §305(b)(4)(B)).

3.8 Supplemental Consultation

The FHWA must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a manner that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH conservation recommendations (50 C.F.R. 600.920(k)).

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APPENDIX I

Fish Handling Monitoring Report

Fish Handling Monitoring Report

Wine Country Road Improvement (NMFS WSB-01-269)

Start Date: ________________

End Date: ________________

Waterway:

Construction Activities:

____
____
____
____
____
____

Number of fish stranded: ____________

Number of salmonid juveniles stranded (what kind?): ____________________________________

Number of salmonid adults stranded (what kind?):____

Methods used to rescue fish:____

____
____
____

Number of fish successfully rescued: ___________

How long were the fish stranded before captured and released to flowing water?

____
____
____

Number of fish were killed during this activity: __________

Send report to: National Marine Fisheries Service, Washington State Habitat Branch (WSB-01-269), 510 Desmond Drive SE, Suite 103, Lacey, Washington 98503